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Management of Satellite and Waste Accumulation Areas for Hazardous and Mixed Waste

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New document or new requirements

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36.3

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1.0 Introduction

This document is designed to enable personnel working at Lawrence Livermore National Laboratory (LLNL) to better understand and comply with the requirements for temporary accumulation of hazardous and mixed (both radioactive and hazardous) wastes. Document 36.1, "Waste Management Requirements," in the *Environment, Safety, and Health (ES&H) Manual* provides a broad overview of how hazardous, radioactive, mixed, and medical wastes are managed at LLNL. Waste types are defined in Appendix A of Document 36.1. In contrast, the present document identifies basic requirements, along with organizational and individual responsibilities, specifically related to management of hazardous and mixed waste in Satellite Accumulation Areas (SAAs) and Waste Accumulation Areas (WAAs).

The courses designed to increase your understanding of this subject are:

- Regulated Waste Generation and Certification Core Training (EP0006-COR).
- Hazardous Waste Generation and Certification Module (EP0006-HZ)
- Radioactive Waste Generation and Certification Module (EP0006-RD)
- Hazardous Waste Generation and Certification Module Refresher (EP0006-HZRW)
- Radioactive Waste Generation and Certification Module Refresher (EP0006-RDRW)
- Waste Accumulation Area (WAA) Operations (EP0053).

LLNL's *Waste Acceptance Criteria* (WAC; UCRL-MA-115877, current revision) contains useful information and supplements the EP0006 courses. Radioactive waste management requirements, including instructions for completing a radioactive waste label, are found in the WAC. A copy of the WAC can be obtained from LLNL Library Services

(http://library-r.llnl.gov/uhtbin/cgisirsi/0/0/60/143).

For guidance on managing medical waste at LLNL, refer to Document 36.1, "Hazardous and Medical Waste Management Requirements," in the *ES&H Manual*.

1.1 Regulatory Background

Environmental laws and regulations detailing the management of hazardous and mixed wastes distinguish between storage and accumulation of such substances. Hazardous and mixed wastes can only be stored with permission from the California Department of Toxic Substances Control (DTSC) via a Resource Conservation and Recovery Act (RCRA) permit, and accumulation must meet prescribed State regulations, which are detailed in this document. The U.S. Environmental Protection Agency (EPA) has delegated authority to implement federal RCRA requirements to the State of California. California regulations are as stringent as, or more stringent than, federal requirements.

At LLNL, only the Radioactive and Hazardous Waste Management (RHWM) Division within the Environmental Protection Department (EPD) operates permitted hazardous and mixed waste storage facilities. However, regulations govern management of hazardous and mixed wastes, and allow the temporary accumulation of small quantities of these wastes in a SAA (also sometimes referred to as workplace accumulation areas) or WAA without obtaining a permit if certain requirements are met. The term "accumulation" in this context means the collection of small quantities of hazardous or mixed wastes at workplace station(s) without a DTSC-approved permit but in accordance with regulatory requirements. A waste generator may accumulate limited volumes of hazardous and mixed waste at a SAA for up to 9 months prior to being relocated to a WAA. LLNL has designated WAAs where waste may accumulate on site for up to 90 days without obtaining a permit.

1.2 Scope

This document explains the hazards, controls, individual responsibilities, and organizational responsibilities associated with managing hazardous and mixed waste in SAAs and WAAs. The principal topics focus on requirements for:

- Accumulating waste at a SAA
- Planning and constructing a WAA
- Operating and maintaining a WAA
- Closing a WAA

In addition to SAAs and WAAs, hazardous and mixed wastes can also be accumulated in a hazardous waste retention tank with a 90-day waste accumulation time limit. For guidance on managing hazardous waste retention tanks at LLNL, refer to Document 32.2, "Management of Retention Tank Systems," and Document 32.1, "Management and Maintenance of Water Quality," in the *ES&H Manual*.

2.0 Hazards

Many scientific and industrial activities at LLNL generate wastes. Hazardous and mixed wastes are potentially harmful to human health and could result in injury if they are not properly managed. Improperly managed waste could also result in spills that cause an adverse impact to the environment.

3.0 Controls

3.1 General Controls for SAAs and WAAs

General controls, such as physical location and accumulation time limits, govern the accumulation and storage of wastes.

The SAA is an area where small quantities of hazardous and/or mixed wastes are temporarily accumulated at or near the initial point of generation. Each SAA and the accumulation of waste at the SAA shall be under the direct control of the individual generating the waste, specifically in the same or adjacent room or work area. If the waste generator cannot observe the container at all times, steps shall be taken to prevent additions of unidentified wastes. Locking the container or locking the area where the container is stored is recommended to demonstrate control. Hazardous and mixed wastes accumulated at a SAA are subject to both accumulation time limits and quantity limits, as described in Section 3.3.1

A WAA is an officially designated area where hazardous and mixed wastes generated by an organization are accumulated in containers until they are transported to a permitted treatment, storage, or disposal facility (TSDF). WAAs are subject to time limits as described in Section 3.5.1.5 A WAA serves an important role in the life cycle of waste management in that it provides temporary waste accumulation, without requiring a permit, after hazardous or mixed wastes reach SAA time or quantity limits. Storage in WAAs facilitates the characterization of the waste and processing of documentation so the waste can be received in the permitted facility within time limits. WAAs may be operated by an authorizing organization or by RHWM.

3.2 General Administrative Controls for SAAs and WAAs

3.2.1 Waste Identification

The waste generator (defined in Document 36.1 of the *ES&H Manual* and in Section 4.1.3 below) or individual who has been designated as the waste generator identifies the composition of wastes produced by an operation or experiment, including identification of the waste matrix, all of the hazardous and/or radioactive constituents of each waste, and their amounts. Waste identification is based on the waste generator's knowledge of

the process, its waste streams, and supporting documentation. The following kinds of information can be used to support waste generator knowledge:

- Bench top research data.
- Historical data.
- Chemical name and structural formula. Where applicable, state the concentration in acceptable units, such as milligrams per kilogram or milligrams per liter.
- Product literature.
- Product Material Safety Data Sheet (MSDS).
- Manufacturer information. Contact the manufacturer for information on the hazardous constituents; however, out-of-state manufacturers may not be familiar with California-specific regulations.
- ChemTrack. The EPD ChemTrack Operations Group maintains a computerized database of chemical products used at LLNL. For instance, ChemTrack could identify a list of potential chemicals in a building or room, which would narrow the possible contents of an unknown container. Note: The waste generator shall ensure the ChemTrack bar code is removed from containers prior to placing in the waste container. Removed barcodes shall be returned to ChemTrack (L-621).
- RHWM performs field and laboratory analyses to confirm information supplied by the waste generator regarding the physical and chemical properties of the waste stream. If insufficient waste identification information is provided, RHWM shall contact the Responsible Individual (RI) for the project generating the waste stream. With authorization from the RI, RHWM performs a full-scale waste analysis. RHWM pays for sampling costs for hazardous and mixed waste characterization from programs that pay General and Administrative (G&A) costs; however, analysis of unknown materials or wastes is not covered by RHWM. Costs to identify an unknown material or waste are incurred by the authorizing organization.

3.2.2 Packaging

The waste generator shall package waste in proper containers, or obtain assistance to ensure that appropriate containers are used, so that the waste may be safely transported pending disposal. RHWM removes waste only if it is packaged in a tightly closed, approved container that shows no sign of damage, deterioration, bulging, or leaking. Selecting the proper container requires knowledge of the waste, the regulations enacted to manage it, and the characteristics of a container. Appendix A provides more information on container selection. The RHWM field technician can provide guidance on appropriate packaging as a function of input from the waste generator.

Waste containers shall remain closed except when adding or removing waste. After adding wastes by funnel, the funnel shall be removed from the container and the lid tightly affixed on the container. After removing the funnel and ensuring that it is free of residual liquid, the waste generator or WAA operator shall place the funnel in a labeled beaker or other container compatible with the waste. (Funnels with tight-fitting lids and threaded plugs are an exception.) The waste generator or WAA operator shall ensure that wastes added to a container are compatible with wastes already in the container and the container itself, and that any new wastes are listed on the waste label.

Overfilled waste containers can burst or leak when exposed to summer heat in a WAA or outside a SAA. To prevent such problems, 55-gallon drums containing liquid require a minimum of 3 inches of headspace; carboys require a minimum of 2 inches of headspace. Contact the RHWM technician for guidance regarding headspace if other containers are used. A regulatory exemption allows for venting of containers for health and safety reasons. Contact the environmental analyst for applicability of this option to an operation. If it is necessary to vent containers, a carbon filter may be required. Contact your ES&H Team for specific information regarding this practice.

3.2.3 Container Labeling

The identity of waste in each container shall be recorded on a label. Labeling both hazardous and mixed waste containers is required under federal and state laws. A waste accumulation log sheet should be used for numerous entries to ensure an accurate accounting of waste constituents and quantities. Waste generators shall follow these container labeling requirements:

- Use either a hazardous waste or mixed waste label, depending on the waste stream being managed. Obtain all labels from Procurement & Materiel, Customer service—Stores/Receiving or from the RHWM field technician in facilities being provided full service by RHWM.
- Use an indelible, black ink, extra-fine-point, Sharpie pen. Labels filled out with other types of pens or colors readily fade and are not accepted by RHWM.
- Fill out the label as soon as waste is placed in the designated waste container (the accumulation start date), and update the label whenever new waste types are added to the container.
- Fill out the label accurately and legibly. The waste generator ensures that all sections of the label are completed with generator name, phone number, waste description, hazardous properties, hazardous constituents, waste form, and workplace start date and end date (as described in Section 3.3.1). Improperly labeled waste containers may not be moved from the SAA or WAA. Refer to Appendix B, "Instructions for Completing Labels," for a detailed explanation of labeling instructions for each type of waste.

- Place the label on the exterior of the container in the upper half of the container side (never on the lid) where it can be read. For liquid wastes, affix the label on the side of the container away from the opening. If additional containment is used for the primary container that obstructs the primary container's label, then the outer containment also needs to be labeled. When an overpack container is used for numerous small containers, the label on the overpack needs to reflect the hazardous properties, waste descriptions, and hazardous or radioactive constituents of each container, as well as the earliest accumulation date. When numerous entries are made, a waste accumulation log sheet identifying the date, type, and amount of waste should be used.
- Peel off the old label and use a new one if a mistake is made on the label. Initialed changes, use of white-out, or placing a new label over the original label are unacceptable methods for correcting labeling errors. Destroy the old label.
- Refer to Appendix D of LLNL's *WAC*, and the appropriate EP0006 series course(s), for more detailed information on labeling.
- Contact the RHWM field technician or the environmental analyst for questions regarding labeling.

Other wastes, such as polychlorinated biphenyls (PCBs) and beryllium-contaminated wastes, require additional, special labels. The waste generator ensures that other identification labels (e.g., carcinogen or PCB) are affixed, as appropriate. See Documents 14.14, "Management of Polychlorinated Biphenyls," and 14.4, "Implementation of the Chronic Beryllium Disease Prevention Program Requirements," respectively, in the *ES&H Manual*. Containers of nonhazardous and hazardous materials (e.g., gallon carboys used to hold deionized water or squeeze bottles used to hold product) should also be clearly marked with the constituents to avoid confusion.

3.2.4 Waste Disposal Requisition

The Waste Disposal Requisition (WDR) is a document used to transmit required information to RHWM so that waste can be properly managed. It is an important internal (LLNL) waste-tracking document. A WDR shall be completed before waste is removed from the SAA and shall accompany the waste container to the WAA. RHWM cannot accept waste without a properly completed WDR and will contact the RI if issues cannot be easily resolved with the generator. See Appendix B of the WAC for details on completing the WDR.

The authorizing organization responsible for the SAA shall determine the appropriate account number to be placed on the WDR. Using the correct account number is important because the account number will be used to generate data on waste generation and recycling.

3.2.5 Nonconformance and Corrective Action Report

A Nonconformance and Corrective Action Report (NCAR) may be issued to the RI by the person discovering the nonconformance (e.g., generator, verifier, waste certification engineer, etc.) in the SAA or WAA when items, waste packages or activities are observed that do not conform to specified requirements. A nonconformance is a deficiency in characteristic, documentation, or procedure that renders the quality of the item, waste package, or activity unacceptable or indeterminate (e.g., physical defects of

the container, incorrect or inadequate documentation, improper characterizations). See RHWM procedure, "Control of Nonconformances" (ADM105) for detailed information on NCARs.

3.3 Administrative Controls for Accumulating Waste in SAAs

3.3.1 Accumulation Time and Quantity Limits

Regulations governing the management of hazardous and mixed wastes allow the accumulation of a volume up to 55 gallons of compatible wastes or one quart of compatible acutely (RCRA) or extremely (DTSC) hazardous or mixed waste for up to one year at or near the point of generation without obtaining a permit. The accumulation start date is the date on which waste is first placed in the container. In cases where the volume limit is not an issue, LLNL complies with the 1-year maximum time limit by designating the maximum time in a SAA at 9 months, thereby ensuring that the maximum time of 90 days in WAAs, also specified in the regulations, is not exceeded.

It is important to remember that:

- Once the volume limit is reached in a SAA, the container(s) shall be moved to a WAA based on the volume restriction, even if the 9-month time limit has not been reached.
- The one-year limit also includes time for container closure, requisition processing, and transport arrangements, which are described below.

Once the volume limit of 55 gallons of hazardous or mixed waste or 1 quart of acutely or extremely hazardous or mixed waste accumulation limit is reached, or the 9-month accumulation limit is reached, the "Workplace End Date" shall be placed on the label.

Hazardous and mixed waste shall be moved to a WAA within 3 calendar days from the "Workplace End Date." If the third day is a Saturday, Sunday, or national holiday, day 3 may be the following workday. LLNL-specific holidays do not apply. The 90-day accumulation period at the WAA starts from the "Workplace End Date."

The waste generator should begin the container closure, requisition processing, and transport process a week or more before the volume limit or time limit is reached to facilitate a timely transition from SAA to WAA (see Section 3.3.6). Such practice is particularly beneficial when the SAA is a Radioactive Materials Management Area (RMMA) and when a RHWM technician makes the transfer from SAA to WAA (see Document 2.1, Appendix D, of the *ES&H Manual* for responsibilities on such transfer).

Regulations allow for certain exceptions to the 55-gallon or 1-quart volume limit. For example, some waste streams generated by processes located within the same physical area may be incompatible. In such cases, a separate volume limit of 55 gallons or 1 quart applies to each group of incompatible waste stream. A waste generator might also determine that using a single volume limit to accumulate a specific, compatible waste stream is not practical. Such use might prevent recycling, or require unreasonable accumulation procedures, or might be unsafe from an environmental, worker, or public health and safety standpoint. In such cases, the waste generator may use a separate volume limit for each specific and compatible waste stream. The ES&H Team can help with such determinations. If the waste generator elects to use more than one volume limit because of a rationale presented above, it is recommended that the waste generator document the rationale and maintain records.

3.3.2 Temporary Waste Accumulation

Hazardous and mixed wastes may be accumulated in containers in SAAs, but there can be no accumulation of waste prior to accumulation at the SAA. However, certain generation activities (e.g., equipment maintenance) may necessitate temporary interim accumulation of waste during a process. Contact the environmental analyst about special situations related to generation activities.

3.3.3 Segregation

The waste generator shall segregate wastes in the SAA into separate containers according to the chemical compatibility (e.g., acid, caustic, organic, or oxidizers) and physical state (e.g., liquid or solid) of the materials involved. Segregation is required because some chemicals may be highly reactive if mixed with others. Improper mixtures may require special analyses and disposal procedures. All waste types (i.e., low-level radioactive waste, transuranic waste, hazardous waste, mixed waste, or nonhazardous waste) shall be packaged separately. The ES&H Team industrial hygienist, RHWM technician, and environmental analyst can provide guidance on proper waste segregation specific to each waste stream. Appendix E, "Guidelines to Chemical Compatibility," in the *WAC* (UCRL-MA-115877, current revision) provides further chemical compatibility information.

Nonhazardous and nonradioactive waste containers are often located in areas where hazardous, mixed, and/or radioactive wastes may be generated. In such cases, the nonhazardous and nonradioactive waste containers should be clearly identified as such,

and segregated from hazardous, mixed, and radioactive containers to avoid confusion and inappropriate management and disposal. Trash cans should be segregated from regulated waste containers to preclude inadvertent mixing or emptying of hazardous, mixed, and radioactive containers by custodians. (See Lesson Learned, "Label Waste Receptacles Clearly," September 14, 1999.)

3.3.4 Secondary Containment

Secondary containment for liquid wastes provides an effective means of avoiding significant consequences from accidental leaks or spills. Secondary containment for liquid wastes is strongly encouraged as a best management practice in SAAs.

To minimize the consequences of leaks or spills, it is recommended that waste containers be located away from open floor drains, sink drains, and unprotected soil. However, if an open floor drain in the room is connected to the sanitary sewer, septic system, or nonhazardous/nonradioactive retention tank, or if waste is being accumulated at or above a sink connected to the sanitary sewer or a nonhazardous and nonradioactive wastewater retention system, then secondary containment is strongly encouraged. Contact the environmental analyst for guidance regarding appropriate secondary containment capacity. Secondary containment needs to be compatible with the waste, and wastes within the same secondary containment need to be compatible.

3.3.5 Inspecting the SAA

As a best management practice, it is recommended that the waste generator conduct weekly reviews of SAAs under the waste generator's control to check for leaking or corroded containers, accurate labeling, accumulation within time and quantity limits, and good housekeeping. Deficiencies shall be corrected.

3.3.6 Transportation of Waste from SAA to the WAA

Prior to bringing waste to a WAA, a waste generator is responsible for completing the functions listed above for General Administrative Controls for SAAs and WAAs (see Section 3.2), and for Administrative Controls for Accumulating Waste in SAAs (see Section 3.3) to ensure that the container can be safely transported to, and properly managed in, the WAA.

The waste generator shall transport labeled waste containers to the WAA (or arrange transport by the RHWM technician) within 3 calendar days of the Workplace End Date. The waste generator shall initiate a WDR form (see Section 3.2.4) as soon as the waste is ready to be transported from the SAA. Information on the WDR form should exactly match information on the label. If the WDR form is incorrectly filled out, the RHWM technician will return it to the waste generator for any needed additions or corrections. Further information about completing the WDR can be found in LLNL's *WAC* and in the appropriate EP0006 series course(s).

Transportation of waste from the SAA to WAA can be accomplished by two basic methods. In the first method, the waste generator packages and labels the waste, then coordinates with the WAA operator (or RHWM technician), and ensures that the waste is transported to the WAA. In the second method, the waste generator or RHWM technician takes unpackaged waste to the WAA and puts it in labeled containers that remain at the WAA until they are filled and/or until 90 days have elapsed, whichever comes first. More detail on LLNL requirements for transport of waste between a SAA and a WAA is available in Document 21.2, "Onsite Hazardous Material Packaging and Transportation Safety Manual," in the *ES&H Manual*, and the *LLNL Interim On-Site Transportation Safety Document*.

3.4 Engineering Controls for Planning and Constructing a WAA

A WAA can be considered for construction at any appropriate location near a point of routinely generated hazardous or mixed waste. The need for a WAA is best determined by consultation between the management of an organization generating waste and the ES&H Team serving that authorizing organization. Siting considerations include:

- Ease of access and egress (including waste-container handling)
- Location relative to the site perimeter
- Proximity to storm drains
- Proximity to sensitive natural resources
- Security access
- Availability of utilities, such as power, telephone, and water
- Existence of historical contamination

A temporary WAA may be needed on occasion in construction areas or where waste generation is irregular or infrequent. Temporary WAAs are required to satisfy the same legal requirements as for a permanent WAA, including secondary containment, safety equipment, development of a Contingency Plan, scheduled inspections, and proper closure (more detail on each of these topics is given below).

Once the need for a WAA is established, the organization generating the waste is responsible for constructing it. During planning and design stages, the responsible organization works with the ES&H Team to ensure that appropriate safety and environmental criteria are incorporated into the final design. For example, a National Environmental Policy Act (NEPA) evaluation is required when establishing a new WAA, and that process should be started early in the planning cycle. The design capacity for the WAA should be sufficient to adequately segregate wastes by compatibility.

RHWM should be consulted prior to and during WAA construction to ensure that RHWM criteria for WAAs are met. The ES&H Team environmental analyst, industrial hygienist, and health physicist may have important input on how waste is accumulated and segregated. Plant Engineering should be contacted for construction and siting criteria. Section 4.2 summarizes responsibilities for planning and constructing a WAA.

3.5 Controls for Operating and Maintaining a WAA

The WAA shall be operated so that waste is properly managed, does not adversely impact human health, and is not released to the environment. Successful management of a WAA is done principally through the WAA operator and WAA coordinator. A current copy of the WAA Contingency Plan shall be posted at each WAA. WAA contingency plans are available from the environmental analyst.

3.5.1 Preparing, Transferring, and Accumulating Waste in a WAA

Hazardous and mixed waste that has been properly identified, packaged, and segregated may be accumulated in a WAA for up to 90 days. Within the 90-day time period, the waste shall be removed by RHWM for treatment, storage, and/or disposal at an onsite or offsite TSDF. Once waste is in the WAA, it may go through any or all of the processes described below, depending on the state at which it entered the WAA.

3.5.1.1 Waste Identification. The waste generator shall identify hazardous or mixed waste, as described in Section 3.2.1. When waste identification information is insufficient, the waste generator shall request that RHWM perform a waste analysis sufficient to identify unknown properties in the constituents. A copy of the analytical report shall accompany the WDR. The environmental analyst can provide guidance on identifying wastes as hazardous or nonhazardous and identifying the hazardous characteristics and/or hazardous and radioactive constituents. For assistance in identifying unknown materials, the waste generator should contact the environmental analyst. Sufficient knowledge of the waste-generating process, chemical constituent concentrations, and volumes (i.e., generator knowledge) is used by RHWM to assign regulatory required waste codes, assign profile numbers, determine hazardous properties (e.g., toxic, corrosive, ignitable, or reactive), and perform a variety of other activities to ensure proper treatment, storage, and/or disposal. RHWM performs field and laboratory analyses to confirm the information the waste generator supplied on the physical and chemical properties of the waste stream.

3.5.1.2 Packaging. The waste generator shall package waste as specified in Section 3.2.2. Waste containers shall remain closed while in the WAA and shall only be opened to add compatible wastes or to sample wastes.

3.5.1.3 Container Labeling. Waste accumulating in the WAA shall be labeled in the same manner as that specified in the General Administrative Controls for SAAs and WAAs (see Section 3.2.3).

3.5.1.4 Accumulation and Segregation. Containers of hazardous or mixed waste accumulated in a WAA shall be clean and free of external contamination. If the container is designed to be stacked, containers may be stacked in a WAA, but no more than two high. Secondary containment is highly recommended for liquid waste. Contact the environmental analyst for guidance regarding appropriate containment capacity.

Hazardous and mixed waste containers shall be segregated in the WAA according to compatibility of the materials involved. Radioactive wastes are required to be segregated from nonradioactive wastes and packaged separately. The ES&H Team industrial hygienist, RHWM field technician, and environmental analyst can provide guidance on proper waste segregation specific to each waste stream (see Appendix E, "Guidelines to Chemical Compatibility," in the *WAC*).

3.5.1.5 Accumulation Time Limits. Hazardous and mixed waste may be accumulated within the WAA for a maximum of 90 calendar days, unless special permits are obtained from environmental regulatory agencies. If waste is accumulated directly in the WAA without first being accumulated in a SAA, then the 90-day accumulation period starts when waste is first placed in the container in the WAA. However, if waste is accumulated in a SAA and then moved to a WAA, the 90-day accumulation period starts on the SAA Workplace End Date recorded on the hazardous or mixed waste label attached to the container.

3.5.1.6 Waste Disposal Requisition. A WDR shall be used to initiate transport of wastes from the WAA to a permitted TSDF. A RHWM chemist evaluates the WDR and either identifies necessary modifications and returns the form to the waste generator, or approves the WDR and forwards it to the RHWM Requisition Control Office (RCO). Once the WDR is approved, the technician places it on the waste container.

3.5.2 Preparing Containers for Pickup from the WAA

The WAA operator shall arrange through RHWM for waste to be picked up from the WAA within 90 days from the Workplace End Date (for waste originating in a SAA) or within 90 days of the WAA Accumulation Start Date (for wastes accumulated directly in the WAA). Containers are required to meet RHWM criteria for transport onsite. Incompatible wastes shall be stored on separate pallets. The WAA operator should verify that containers are stabilized on pallets, including taping multiple containers together and to the pallet.

3.5.3 WAA Inspections

The WAA operator or designee shall inspect the WAA every 7 calendar days to check container condition, emergency equipment, segregation issues, and discharges that could cause or lead to releases of hazardous or mixed waste, or pose a threat to human health. Inspections are required even if the WAA does not currently contain any waste. Inspections are logged on the Weekly Inspection Checklist, which records the name of the inspector, date, time of inspection, and deficiencies as shown in Appendix C. Any deficiencies shall be brought to the attention of the WAA coordinator. Corrective actions need to be documented along with the date, time, and name of the inspector.

WAA inspection records are routinely audited by federal and state inspectors and shall be available for inspection by regulatory agencies. Records are to be kept by the current WAA operator for at least 3 years. In addition, other inspection requirements may be associated with specific types of wastes. Refer to the "Waste Accumulation Area Operations" course EP0053 for more detailed explanations of each item on the Weekly Inspection Checklist. Finally, walk-throughs of the WAA on LLNL work days (when the WAA is in use) are recommended as a best management practice.

3.5.4 Maintaining a Current Contingency Plan

A Contingency Plan (UCRL-AR-10233, current revision) is required for each WAA. The purpose of the Contingency Plan is to provide information to personnel on how to minimize and respond to human health and environmental threats resulting from fires, explosions, or any release (spill) of hazardous or mixed waste to the environment. The Contingency Plan identifies personnel responsibilities, emergency equipment, and required actions necessary to mitigate incidents associated with the WAA. It is implemented whenever a large incident occurs. Small and large incidents are defined in Section 3.5.6.1, "Small Release," and Section 3.5.6.2, "Large Release."

EPD prepares and updates the WAA Contingency Plan. The Contingency Plan contains general information that applies to all WAAs and has appendices specific to each WAA. WAA personnel, working with the environmental analyst, are responsible for ensuring that the appendix describing an existing WAA that is under the WAA personnel's control is accurate and consistent with existing safety documents (i.e., FSP) and that a WAA-specific appendix is prepared for any new WAA.

The Contingency Plan, including the WAA-specific appendix, shall be posted at the WAA. As a best management practice, post the Contingency Plan in a labeled, weatherproof holder on the outside wall of the WAA to maximize the likelihood that it will be available in readable condition during an emergency.

3.5.5 Safety Equipment in a WAA

WAA personnel ensure that required safety equipment is maintained in the WAA. The WAA coordinator has ultimate responsibility for ensuring that such equipment is present. The following safety equipment shall be maintained at all WAAs:

- A portable fire extinguisher.
- An emergency spill kit, consistent with the WAA Contingency Plan, that at a minimum includes hand tools, absorbent material if liquids may be present, and clean, empty containers to receive waste resulting from cleanup of an accidental waste release.
- An emergency eyewash, if liquid hazardous or mixed wastes may be present.
- A deluge shower, if liquid hazardous or mixed wastes may be present.
- A device, such as a telephone or hand-held two-way radio capable of summoning emergency assistance shall be readily available at the scene of operations.
- Personal protective equipment (PPE), such as gloves, safety glasses, aprons, boots, coveralls, and face shields, as identified by the ES&H Team industrial hygienist.
- Hazard warning signs (e.g., No Smoking, Hazardous Waste Area).
- A posted Contingency Plan (see Section 3.5.4).
- Water at adequate volume and pressure to supply water hose streams, foam-producing equipment of automatic sprinklers, or water spray systems (optional if a fire-extinguishing system is installed).
- Secondary containment.

Other equipment, such as lighting, ventilation, perimeter fencing, and a first-aid kit, may also be necessary. Appendices A and B of the *Contingency Plan for Waste Accumulation Areas* (UCRL-AR-110233, current revision) contain additional information regarding PPE, and equipment to contain and absorb spills. For assistance in evaluating the need for additional emergency-response equipment, contact your environmental analyst. For assistance in evaluating the need for additional safety equipment, contact the ES&H Team industrial hygienist.

3.5.6 Release Prevention and Response

Releases—namely, leaks or spills of waste container contents—can be minimized by keeping waste containers closed at all times, except when adding or removing wastes. Ensure that containers are located away from common traffic paths and work areas to avoid accidental upset of a container, and away from open floor drains, sink drains, and

unprotected soil. During waste handling and transport, move waste containers carefully using the proper handling equipment. Secondary containment for liquid waste as specified in Section 3.5.1.4 shall be provided in WAAs when a liquid waste container is present.

If a release occurs, the primary objectives of the response, in order, are to protect human health, the environment, and property. Use the Contingency Plan to help meet the response objectives. Additional information regarding spill response can be found in Document 22.2, "Emergency Management," in the *ES&H Manual*.

3.6 Controls for Closing a WAA

When an authorizing organization no longer intends to manage wastes in a WAA, its closure should be considered. The authorizing organization operating the WAA is generally responsible for funding WAA closure activities. The WAA shall be closed in a manner that minimizes the need for further maintenance and controls, and that minimizes or eliminates postclosure release and migration of hazardous constituents. A WAA closure is not complete until all contaminated equipment, structures, and soil are properly disposed or decontaminated, and documentation by EPD is completed. The DTSC holds the authority to request a demonstration that a WAA closure was performed in a manner that achieves closure standards. Failure to demonstrate compliance may result in additional closure activities, including sampling and analyses, or an enforcement action by the regulatory agency. A successful demonstration of compliance depends on proper documentation of closure.

The process used to close a WAA follows these steps:

- The authorizing organization elects to close a WAA.
- The authorizing organization notifies the environmental analyst of the decision.
- If necessary, the environmental analyst develops a cost estimate for the authorizing organization's review and approval.
- The environmental analyst shall complete the following tasks as part of the closure process:
    - — Ensure that all waste has been removed.
    - — Conduct a records review of internal EPD Environmental Incident Reports, DOE Occurrence Reports, WAA weekly inspection records, and Environmental Restoration Division (ERD) historical data (if applicable), to determine whether previous releases have occurred within the WAA.
    - — Interview personnel responsible for WAA operation.
    - — Conduct a visual assessment of the WAA for indicators of environmental contamination.

If no evidence of contamination is discovered, EPD documents the results of the closure evaluation in a memorandum addressed to the WAA coordinator. The authorizing organization shall not close the WAA until the memorandum is issued by EPD. WAA inspections shall continue to be performed until the WAA is closed.

If evidence of current or past contamination is discovered, additional actions are required. These actions may involve decontamination of equipment or remediation of contamination in the environment, followed by confirmation sampling to ensure that no residual contamination remains at the WAA. EPD documents the results of closure activities in a memorandum addressed to the WAA coordinator. The authorizing organization receives copies of all documentation. EPD maintains a copy of closure records.

4.0 Responsibilities

4.1 Responsibilities for SAAs

All workers and organizations responsible for SAAs shall refer to Document 2.1, "Laboratory and ES&H Policies, General Worker Responsibilities, and Integrated Safety Management," in the *ES&H Manual*. RHWM responsibilities are addressed in detail in Document 2.1, Appendix D. Organizational responsibilities for SAAs rest primarily on the waste generator. The requirement to position SAAs so that they are under direct control of the waste generator is designed to prevent incompatible mixing of wastes, generation of improperly identified waste, or other unsafe management practices.

4.1.1 Authorizing Organization Responsibilities

The authorizing organization is responsible for:

- Designating the SAA operator and location of the SAA
- Managing the SAA to ensure that volume and time limits are not exceeded
- Ensuring that waste generator responsibilities are met
- Purchasing waste containers, packaging materials, and labels

4.1.2 Limited Generator Responsibilities

A limited generator is an individual who contributes waste to a container(s) in a SAA but does not sign a WDR. However, a limited generator is required to have training specific to the job activity. This training can be provided by the limited generator's first-line supervisor, and it should include instructions related to the responsibilities listed below. The limited generator is responsible for:

- Ensuring that waste is accumulated in containers at or near the area where waste is generated, and that containers are under the direct control of the operator of the process generating the waste following the requirements in Section 3.3.1.
- Using LLNL-approved containers (containers should be selected by a waste generator, as described below, who has appropriate training).
- Ensuring that wastes that are generated are only added to containers specifically labeled for the waste stream.
- Providing the information required each time waste is added to a container if an accumulation log is used to manage containers.
- Having fundamental knowledge of spill response procedures and safety practices (specific to the work area as defined by the supervisor or facility procedures).
- Obtaining assistance from the LLNL ES&H Team or RHWM field technician when appropriate.
- Ensuring that radioactive waste is segregated from nonradioactive waste, that mixed waste is segregated from transuranic (TRU) and low-level waste (LLW), and that hazardous waste is segregated from nonhazardous waste.
- Ensuring that the container receiving hazardous waste is always closed, except when adding or removing wastes.
- Removing ChemTrack bar codes from containers prior to placing in the waste container. See Document 21.1, "Acquisition, Receipt, Transportation and Tracking of Hazardous Materials," in the *ES&H Manual*. Used bar codes shall be returned to ChemTrack (L-621).

4.1.3 Waste Generator Responsibilities

A waste generator is any individual who handles hazardous waste, makes hazardous waste determinations, participates in any emergency response activity associated with waste handling, and/or manages a SAA or WAA. An individual who only contributes hazardous waste to a SAA and does not sign a WDR is considered to be a limited generator. A waste generator is responsible for the following in addition to all requirements for the limited generator:

- Ensuring that containers are segregated properly within waste generation areas.
- Ensuring that containers are in good condition (e.g., no apparent structural defects or severe rusting).

- Ensuring that wastes are compatible with each other within the same container and are determined to be compatible with the container or liner materials.
- Ensuring that the container holding hazardous waste is handled, transferred, or stored in a manner that does not rupture the container or cause it to leak.
- Ensuring that hazardous or mixed waste labels are properly completed and affixed to the waste container as soon as the first quantity of waste enters the container, and ensuring that the following information is provided:
  - Initial date of waste accumulation.
  - Identification of constituents and physical state of the waste. (If more than one limited generator in the same area is using a container, the identification of waste constituents can be maintained on a waste accumulation log attached to the container.)
  - Statement or statements that call attention to the particular hazardous properties of the waste (e.g., flammable, reactive, or other).
- Being aware of all limited generators who contribute waste, and ensuring that they use a waste accumulation log.
- Accurately identifying the waste on WDRs and signing the WDR as the waste generator.
- Moving hazardous and/or mixed waste from the SAA (or ensuring that waste is moved) within 3 calendar days from the "Workplace End Date" (see Section 3.3.1).
- Being current in required annual waste generator training, which may include a combination of the EP0006 series courses.

4.1.4 Environmental Analyst Responsibilities

The environmental analyst is a member of the Environmental Operations Group (EOG) within the Operations and Regulatory Affairs Division (ORAD) of the EPD and serves on ES&H Teams. The environmental analyst is responsible for:

- Interpreting environmental legal requirements and internal LLNL waste management policies for waste generators and ES&H Teams.
- Providing guidance on compliance issues and evaluation of new waste streams.
- Assisting waste generators with identifying hazardous, radioactive, or mixed wastes, and assisting with determination of hazardous properties.

- Keeping the ES&H Team disciplines (i.e., ES&H professionals) and RHWM informed about changes to the waste streams or to the SAA operation.
- Providing assistance during spills and other waste-related incidents.

4.1.5 RHWM Technician Responsibilities

The RHWM technician works with the waste generator to ensure that wastes are properly identified, sampled, packaged, and removed from the SAA within time frames identified in Section 3.3.1. The RHWM technician serves as an interface between RHWM (to arrange final disposition of wastes) and the waste generator. The RHWM technician is responsible for assisting the waste generator with proper management of wastes by:

- Advising and assisting the waste generator in preparing wastes for transport and storage.
- Assisting in the packaging and labeling of wastes.
- Performing waste sampling and field analysis.
- Assisting in the completion of WDRs.
- Distributing new waste containers, labels, and WDRs.
- Transporting waste containers from SAA to WAA or RHWM facilities.
- Responding to spills and other waste-related incidents.

4.1.6 ES&H Team Technician Responsibilities

The ES&H Team technician is responsible for surveying the exteriors of potentially mixed-waste containers for radioactivity to ensure they are within acceptable activity ranges and do not pose a worker-safety concern before removal to the WAA.

4.2 Responsibilities for Planning and Constructing a WAA

4.2.1 Authorizing Organization Responsibilities

The Authorizing Organization is responsible for:

- Determining the need for a WAA.
- Providing a location for the WAA.
- Funding planning and construction of the WAA.

4.2.2 WAA Coordinator Responsibilities

The WAA coordinator, who is designated by the authorizing organization, has the responsibility and authority to make decisions relative to the WAA. The WAA coordinator shall consult with the environmental analyst, RHWM, and Plant Engineering during planning, design, and construction of the WAA.

4.2.3 WAA Operator Responsibilities

The WAA operator is the day-to-day operator of the WAA and is often the RHWM field technician. Sometimes a designated authorizing organization Responsible Individual serves as both the WAA operator and coordinator. The WAA operator shall assist the WAA coordinator in evaluating potential WAA sites and provide input for the design and operation of the WAA.

4.2.4 Environmental Analyst Responsibilities

The environmental analyst is responsible for:

- Providing information to the WAA coordinator on design and construction requirements for a WAA.
- Reviewing and interpreting applicable environmental regulations.
- Surveying with the WAA coordinator the area in which the WAA is to be built.
- Identifying with the WAA coordinator the types and amounts of waste being generated.
- Approving the construction design to ensure that all equipment requirements and all containment, segregation, enclosure, and siting criteria have been met.
- Reviewing with RHWM the final plans for vehicle accessibility during waste pickup.

4.2.5 RHWM Field Technician Responsibilities

The RHWM field technician assists the WAA coordinator and environmental analyst by gathering information on types, amounts, and locations of hazardous waste being generated.

4.3 Responsibilities for Operating and Maintaining a WAA

All workers and organizations responsible for operating and maintaining WAAs shall refer to Document 2.1 in the *ES&H Manual*. Everyone who operates or oversees a WAA shall exercise great care to ensure that wastes are safely handled and correctly managed at all times. Those individuals with operator responsibilities for a WAA are required to

take the training course EP0053, Waste Accumulation Area (WAA) Operations, in addition to EP0006series courses. Two particularly important roles for WAA operation and maintenance are those of the WAA coordinator and WAA operator.

4.3.1 Authorizing Organization Responsibilities

The Authorizing Organization is responsible for appointing the WAA coordinator and ensuring that funds are available to operate the WAA and correct any deficiencies identified in the WAA.

4.3.2 WAA Coordinator Responsibilities

This individual is designated by the authorizing organization that owns the WAA as being responsible for that organization's WAA. The WAA coordinator role may vary from one authorizing organization to another. In general, the WAA coordinator is responsible for:

- Overseeing operations and activities performed at the WAA.
- Ensuring that required safety and spill response equipment is maintained in the WAA.
- Reporting WAA activities to management.
- Reviewing WAA inspection records, waste requisition discrepancy forms, and other documentation associated with WAA operations, as needed.
- Informing the environmental analyst, ES&H Team leader, and authorizing organization of all releases (leaks or spills) as soon as possible after the release occurs.
- Obtaining assistance from and providing assistance to emergency-response personnel, as needed.
- Ensuring that all emergency equipment is cleaned and restocked before operations resume.
- Maintaining an updated WAA Contingency Plan.

4.3.3 WAA Operator Responsibilities

This individual is designated by the authorizing organization that owns the WAA as being responsible for day-to-day operations and activities at the WAA. The RHWM field technician can be formally designated as the WAA operator by the authorizing organization. The WAA operator is responsible for:

- Receiving waste from waste generators.
- Properly maintaining waste at the WAA.

- Preparing waste and arranging for its transport to RHWM.
- Keeping RHWM and the environmental analyst apprised of any change in the types of waste streams accepted into the WAA.
- Conducting WAA inspections every 7 calendar days.
- Assisting waste generators by arranging for waste sampling.
- Maintaining documentation associated with WAA operations.
- Maintaining an inventory of waste in the WAA.
- Maintaining required safety equipment.
- Notifying the WAA coordinator of the status of operations at the WAA.
- Handling small releases with assistance from authorizing organization personnel, the EPD, or the ES&H Team, as needed.
- Recording the details of an incident in written form.
- Staying current in required annual training courses, EP0006-series courses; and EP0053, Waste Accumulation Area Operations.
- Conducting daily walk-throughs of the WAA (when in use), which are recommended as a best management practice.

4.3.4 Waste Generator Responsibilities

The waste generator has the same responsibilities for accumulating waste directly in a WAA as for accumulating waste in a SAA. In addition to the requirements in Section 4.1.3, the waste generator is responsible for observing WAA accumulation and storage time limits.

4.3.5 Environmental Analyst Responsibilities

The environmental analyst provides guidance to the authorizing organization when changes in requirements affect the operation of WAAs and reviews and provides input to Contingency Plans. In the event of an incident at a WAA, the environmental analyst is responsible for:

- Investigating the incident, confirming the type and amount of material spilled, conducting or arranging sampling if necessary, and determining if the release is a reportable incident as defined by environmental regulations.
- Preparing (if appropriate) an internal Environmental Incident Report listing the date, time, location, and description of the release, its circumstances, and the personnel involved.

- Ensuring that all notification and reporting requirements of the appropriate environmental agencies are met, if the incident is reportable. An occurrence report may be required if a release is reportable.
- Verifying cleanup; coordinating follow-up sampling, if necessary; and, in consultation with the authorizing organization, recommending actions to be taken by the waste-generating organization to correct the problem and avoid similar incidents in the future.

During off hours, notifications become the responsibility of the EDO, an individual serving as a 24-hour, on-call resource for help with spill response and notifications.

4.3.6 RHWM Field Technician Responsibilities

The RHWM field technician serves as an interface between RHWM (which arranges final disposition of hazardous wastes) and the waste generator. The RHWM field technician is responsible for:

- Assisting the WAA operator with proper management of the WAA.
- Assisting the waste generator in preparing hazardous waste for accumulation in the WAA and transport from the WAA.
- Assisting in the packaging, labeling, and sampling of waste.
- Responding to waste releases.

The roles, responsibilities, and authorities (RRAs) for the services provided by the RHWM field technician are identified in Appendix D of Document 2.1 of the *ES&H Manual*.

4.3.7 ES&H Team Technician Responsibilities

The ES&H Team technician is responsible for surveying the exteriors of potentially mixed-waste containers accumulated in the WAA to ensure they are within acceptable activity levels before removal from the WAA. The ES&H Team technician also provides safety and health guidance on concerns within the scope of the job description.

4.4 Responsibilities for Closing a WAA

4.4.1 Authorizing Organization Responsibilities

The authorizing organization is responsible for notifying the environmental analyst of a decision to close a WAA and funding WAA closure. The WAA may not be closed until a final closure memorandum from EPD is received.

4.4.2 Environmental Analyst Responsibilities

The environmental analyst is responsible for:

- Ensuring that all waste has been removed from the WAA.
- Conducting a records review to determine if previous releases have occurred.
- Interviewing personnel responsible for WAA operations.
- Conducting a visual assessment for indicators of environmental contamination.
- Preparing a memorandum to the PRAG environmental analyst documenting results of the closure evaluation if no evidence of contamination is discovered.
- Confirming that the WAA has been decontaminated, if decontamination is necessary, and preparing a file report describing reasons for decontamination, sampling results, decontamination activities, and results of confirmation samples.
- Preparing a memorandum to the PRAG environmental analyst addressing decontamination activities, if they are necessary.

4.4.3 PRAG Environmental Analyst Responsibilities

The PRAG environmental analyst is responsible for preparing a memorandum addressed to the WAA coordinator documenting the closure.

5.0 Work Smart Standards

22 CCR §§ 66261.1–66261.126 and appendices, Identification and Listing of Hazardous Waste.

22 CCR §§ 66262.10–66262.89, Standards Applicable to Generators of Hazardous Waste.

22 CCR §§ 66264.1–66264.1102 and appendices, Standards for Owners and Operators of Hazardous Waste Transfer, Treatment, Storage, and Disposal Facilities.

22 CCR §§ 66265.1–66265.1102 and appendices, Interim Status Standards for Owners and Operators of Hazardous Waste Transfer, Treatment, Storage, and Disposal Facilities.

10 CFR 850, Chronic Beryllium Disease Prevention Program.

40 CFR 260, Hazardous Waste Management System: General.

40 CFR 261, Identification and Listing of Hazardous Waste.

40 CFR 263, Standards Applicable to Transporters of Hazardous Waste.

40 CFR 264, Standards for Owners and Operators of Hazardous Waste, Treatment, Storage, and Disposal Facilities.

40 CFR 265, Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage & Disposal Facilities.

49 CFR 100–199, Research and Special Programs Administration, DOT (Offsite).

DOE O 435.1, *Radioactive Waste Management*, Attachment 1, Contractor Requirements Document.

DOE M 435.1-1, *Radioactive Waste Management Manual*, Chapter I, General Requirements and Responsibilities. All sections, except that DOE Orders incorporated by reference are applicable only to the extent they were adopted site-wide in the LLNL WSS set of standards (delete 1.2.A through 1.2.F). Chapter II, High-Level Waste Requirements, is not applicable. Chapter III, Transuranic Waste Requirements, Section A through Q [delete B (3), C, D (4), H (1), H (2), N (4) and P]. Chapter IV, Low Level Waste Requirements, Sections A through R [delete C, D (4), G (1)(d) 1-5, M (1) (c), M (3), N (2) N (7), P, Q, and R (3)].

6.0 Resources for More Information

6.1 Contacts

For information about waste generation in general and environmental compliance issues in particular, including interpretation of legal requirements; for assistance in identifying unknown materials; or for special situations related to waste-generation activities, contact the environmental analyst. For questions regarding container labeling and completion of WDRs, contact the RHWM field technician or environmental analyst. For guidance on proper waste segregation specific to each waste stream, contact the ES&H Team industrial hygienist, RHWM technician, or environmental analyst.

Contact Plant Engineering for WAA planning, construction, and siting criteria. For assistance in evaluating the need for additional safety equipment, contact the ES&H Team industrial hygienist.

6.2 Other Sources

Atomic Energy Act, 42 USC §§ 2011–2292, 1954, amended in 1982.

Document 14.4, "Implementation of the Chronic Beryllium Disease Prevention Program Requirements," in the *ES&H Manual*.

Document 14.14, "Management of Polychlorinated Biphenyls," in the *ES&H Manual.*

Document 22.2, "Emergency Management," in the *ES&H Manual.*

Document 36.1, "Hazardous and Medical Waste Management Requirements," in the *ES&H Manual.*

Lawrence Livermore National Laboratory, Environmental Protection Department, *Contingency Plan for Waste Accumulation Areas*, UCRL-AR-110233, current revision.

Lawrence Livermore National Laboratory, Environmental Protection Department, Environmental Incident Notification and Reporting Procedure, Volumes 1 and 2, June 16, 1993.

Lawrence Livermore National Laboratory, Environmental Protection Department, Regulated Waste Generation and Certification Core Training Course (EP0006-COR).

Lawrence Livermore National Laboratory, Environmental Protection Department, Hazardous Waste Generation and Certification Module (EP0006-HZ)

Lawrence Livermore National Laboratory, Environmental Protection Department, Hazardous Waste Generation and Certification Module Refresher (EP0006-HZRW)

Lawrence Livermore National Laboratory, Environmental Protection Department, Radioactive Waste Generation and Certification Module (EP0006-RD)

Lawrence Livermore National Laboratory, Environmental Protection Department, Radioactive Waste Generation and Certification Module Refresher (EP0006-RDRW)

Lawrence Livermore National Laboratory, Environmental Protection Department, Waste Accumulation Area (WAA) Operations (EP0053) Training Course.

Lawrence Livermore National Laboratory, Hazardous Waste Management Division, *Waste Acceptance Criteria (WAC),* UCRL-MA-115877, current revision.

Lawrence Livermore National Laboratory, *Low-Level Waste Program Certification and Quality Assurance Plan* (M-078-95).

Lawrence Livermore National Laboratory, *Transuranic Waste Characterization Quality Assurance Project Plan*, UCRL-AR-119486, current revision.

State of California, Environmental Protection Agency, Department of Toxic Substance Control, "Accumulating Hazardous Wastes at Generator Sites," January 2002.

7.0 Acronyms

CCR	California Code of Regulations
CES	Chemistry and Materials Science Environmental Services
CFR	Code of Federal Regulations
CMS	Chemistry and Materials Science Directorate (LLNL)

DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
DTSC	California Department of Toxic Substances Control
EDO	Environmental Duty Officer
EOG	Environmental Operations Group of ORAD
EP0006-COR	Regulated Waste Generation and Certification Core Training Course
EP0006-HZ	Hazardous Waste Generation and Certification Module
EP0006-HZRW	Hazardous Waste Generation and Certification Module Refresher
EP0006-RD	Radioactive Waste Generation and Certification Module
EP0006-RDRW	Radioactive Waste Generation and Certification Module Refresher
EP0053	Waste Accumulation Area (WAA) Operations Course
EPA	U.S. Environmental Protection Agency
EPD	Environmental Protection Department (LLNL)
ERD	Environmental Restoration Division of EPD
ES&H	environment, safety, and health
G&A	General and Administrative
LEDO	Laboratory Emergency Duty Officer
LLNL	Lawrence Livermore National Laboratory
LLW	low-level waste
MSDS	material safety data sheet
NCAR	Nonconformance and Corrective Action Report
NEPA	National Environmental Policy Act
ORAD	Operations and Regulatory Affairs Division of EPD

PCB	polychlorinated biphenyl
PPE	personal protective equipment
PRAG	Permits and Regulatory Affairs Group of ORAD
RCO	Requisition Control Office
RCRA	Resource Conservation and Recovery Act
RHWM	Radioactive and Hazardous Waste Management Division of EPD
RMMA	Radioactive Materials Management Area
RRAs	Roles, responsibilities, and authorities
SAA	Satellite Accumulation Area
TRU	transuranic
TSDF	treatment, storage, and disposal facility
WAA	Waste Accumulation Area
WAC	Waste Acceptance Criteria
WDR	Waste Disposal Requisition

Appendix A

Container Selection

To safely manage waste in the workplace and elsewhere at LLNL, it is essential to select the proper waste container. Using an improper container can endanger personnel and the environment. This appendix provides general guidance on how to select the proper waste container. For more detailed guidance, refer to the EP0006-HZ Hazardous Waste Generation and Certification Module course manual, the EP0006-RD Radioactive Waste Generation and Certification Module course manual, and LLNL's *WAC*. Contact the RHWM field technician or environmental analyst for assistance with specific applications. Refer to Document 21.4, "Shipping Explosives Offsite," in the *ES&H Manual* for guidance related to explosive wastes. For guidance on containers compatibility with explosive wastes, contact the Chemistry and Materials Science (CMS) Site 300 facility manager.

Follow these general guidelines when selecting a container for all other hazardous or mixed wastes:

- Use only LLNL-approved waste containers, except for explosives wastes. These are typically Department of Transportation (DOT)-approved containers, but may be non-DOT containers if used on site only.
- Use separate containers for nonhazardous, hazardous, radioactive, mixed, and medical wastes.
- Use separate containers for liquid, solid, and gaseous (pressurized) wastes.
- Select a container that is compatible with the properties of all the wastes (including any reaction byproducts) placed in the container.
    - Do not put corrosive or aqueous wastes in unlined metal containers.
    - Do not put chlorinated solvents in polyethylene (plastic) carboys.
    - Do not use steel cans (such as lard or coffee cans) as secondary containment for liquid wastes sent to RHWM.
    - Contact RHWM for guidance regarding special applications, such as solvent and aqueous mixtures.
- Use separate containers for wastes that are incompatible with each other. Reactions between incompatible wastes can create dangerous fumes, cause explosions and fires, and pose other hazards to workers and the environment.
- Use separate containers for wastes that can be recycled or easily treated to prevent generating waste mixtures that are difficult and expensive to treat and dispose.

Labpacking Small Containers

Numerous, small containers (i.e., 1-liter bottles) that are compatible with each other can be labpacked in a larger DOT-approved container. Labpacking is acceptable as long as there is sufficient absorbent in the labpack container to absorb all of the volume of individual containers. Contact RHWM for assistance with labpacking activities.

Selecting a Container for Aerosol Cans

Aerosol cans, compressed cylinders, and other pressurized liquid containers that contain hazardous product and/or propellant should be packaged separately from other wastes. Do not remove nozzles from aerosol cans unless they are designed to be completely removed. Put the plastic protector cap back on the can, if it is available, and tape the cap in place. Waste aerosol cans should be overpacked in 5-gallon cans one layer deep. Because of the danger of explosion, do not fill 55-gallon drums to capacity with aerosol cans.

Aerosol cans that are empty at standard temperature and pressure are generally considered nonhazardous, and they may be disposed as nonhazardous. Contact the environmental analyst for an evaluation of specific situations.

Appendix B

Instructions for Completing Labels

For current information on completing labels, refer to the EP0006-HZ Hazardous Waste Generation and Certification Module manual and LLNL's *WAC*. For radioactive waste labels, refer to the EP0006-RD Radioactive Waste Generation and Certification Module course manual or the *WAC*

Hazardous Waste

Separate labels are used for the Livermore Site and Site 300. The only difference between the two labels is the site address that appears at the bottom.

Figure B-1. Hazardous waste label for the Livermore Site.

Figure B-2. Hazardous waste label for Site 300.

Hazardous Waste Label Instructions

Keep in mind that explosive waste has a different label and instructions. Contact an environmental analyst if an explosives waste label is needed. Hazardous Waste labels are available from Central Supply and Distribution.

1. *Waste Generator:* Name of the individual who generated the waste. The waste generator name is required to be the same name as that on the accompanying WDR.
2. *Phone #:* Lab phone number of the waste generator.
3. *Waste Description:* Describe the chemical composition of the waste. If a brand name is listed, the type of waste stream is also required (e.g., aqueous, oil, or organic solvents). List only the nonhazardous constituents and process; do not list hazardous components here.
4. *pH:* List the pH if the waste is aqueous. Write N/A if not applicable (e.g., solid wastes or nonaqueous liquids).
5. *Hazardous Properties:* Check appropriate box(es). If you do not know the hazardous properties of the waste, contact the RHWM field technician or environmental analyst.
6. *Hazardous Constituents:* Specify those principal hazardous constituents that make the waste exhibit each hazardous property identified. Do not abbreviate names.
7. *Waste Form:* Check appropriate box (one only).

   Note: Different waste forms are required to be segregated in separate containers.
8. *Disposal Requisition:* Copy the requisition number from the upper left-hand corner of the WDR.
9. *Sample Analysis #:* If the waste has been analyzed, copy the sample identification number from the Chemistry & Materials Science Environmental Services (CES) Laboratory Waste Analysis Request Form.
10. *Workplace Start Date:* The date hazardous waste was first placed in the waste container. For waste accumulated at the WAA, use the WAA Receival or Accumulation Start Date (see Item #12).
11. *Workplace End Date:* The date the container was filled and/or sealed (9-month maximum accumulation time for containers in the workplace). Containers are required to be moved to the WAA within 3 calendar days of the workplace end date and subsequently moved to RHWM within 90 days from the workplace end date. For waste accumulated at the WAA, the end date is not explicitly indicated on the label, although waste accumulated in containers at the WAA is required to be moved to RHWM within 90 days from the WAA Accumulation Start Date (see Item #12). If the waste is in an RMMA, the ES&H Team technician is required to

survey and record the surface-contact radioactivity reading prior to the waste leaving the SAA. Because the survey is required to be performed during the 3-day period after the container is closed, but before it is transferred to the WAA, arrangements should be made with the ES&H Team technician before closure.

12. *WAA Receival or Accumulation Start Date:* The WAA operator completes the date that the waste from the SAA first arrived at the WAA, or the date waste first began accumulating in the WAA.

    Note: The 90-day accumulation time in the WAA following accumulation in a SAA is calculated from the Workplace End Date, not the WAA Receival Date.

    The WAA receival date can be no later than 3 calendar days after the Workplace End Date.

13. *RHWM Receival Date:* Filled out by RHWM when the waste enters the RHWM facility. RHWM has one year from the receival date to treat, store, or dispose of the waste offsite.

14. *Compatibility Code:* Filled out by RHWM prior to the waste entering the RHWM facility. This code assists in segregation of waste.

Mixed Waste

Mixed Waste labels are available from Central Supply and Distribution. Separate labels are used for the Livermore Site and Site 300.

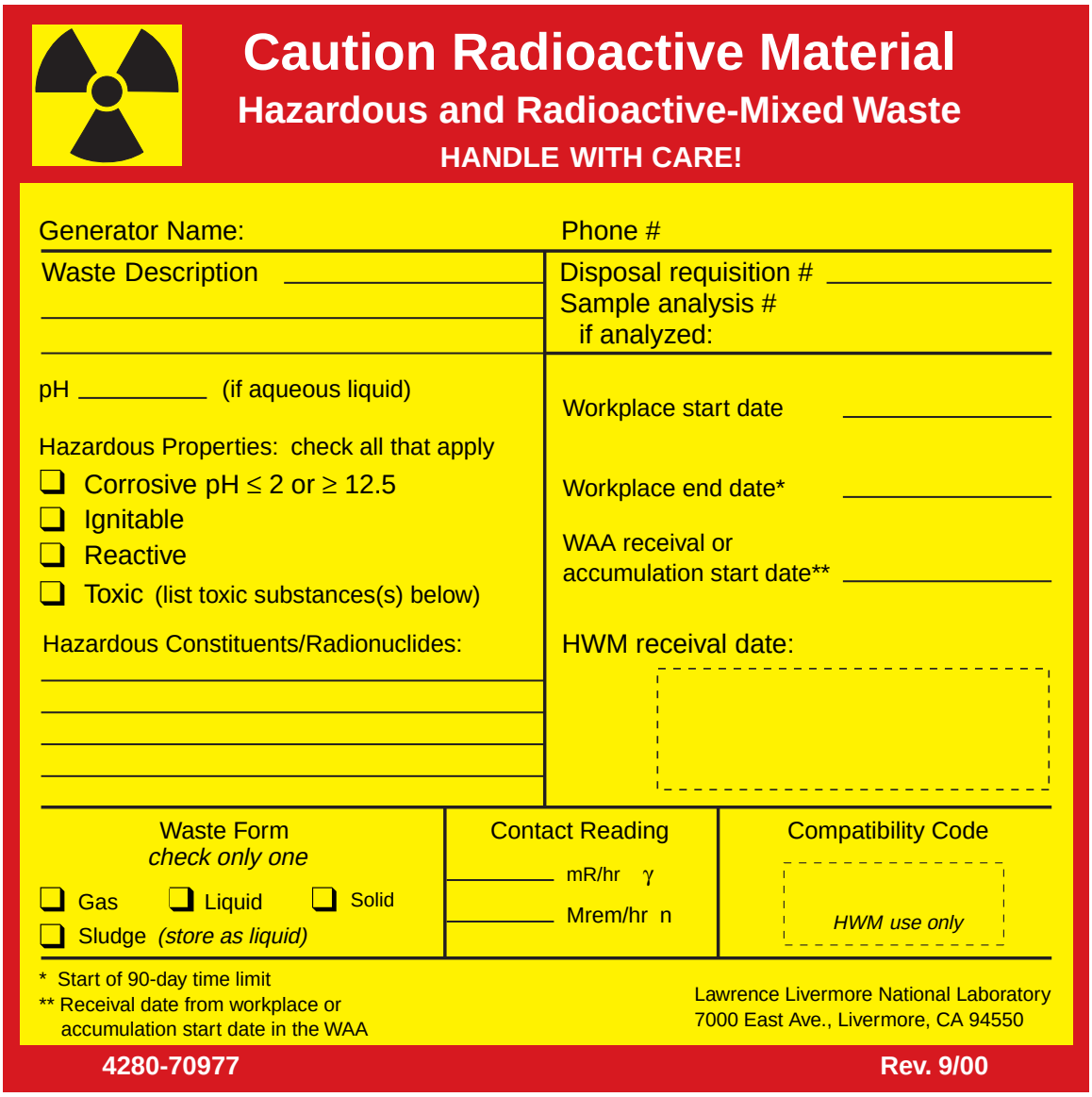

Figure B-3. Mixed waste label for the Livermore Site.

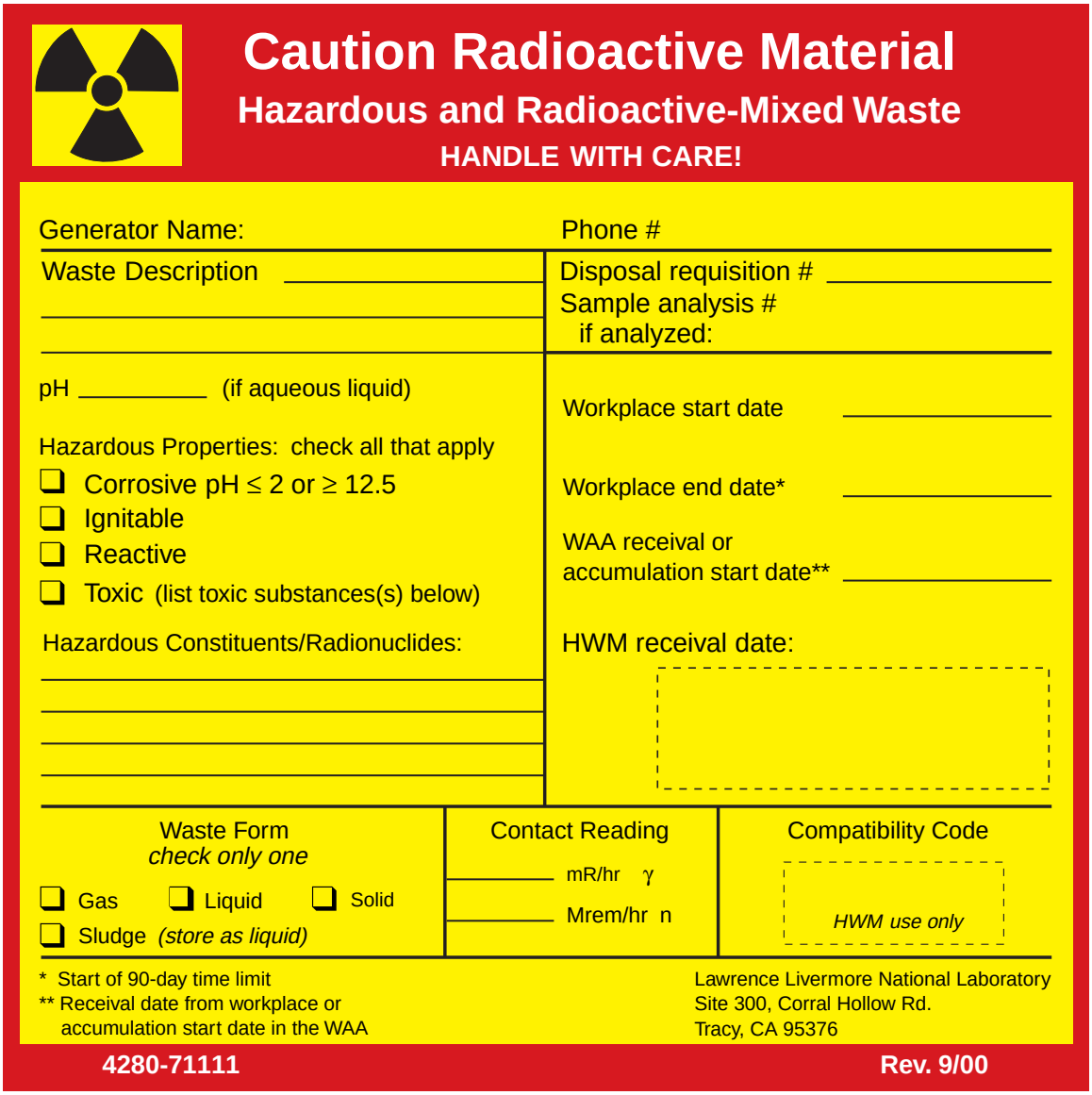

Figure B-4. Mixed waste label for Site 300.

Mixed Waste Label Instructions

1. *Waste Generator:* Name of the individual who generated the waste. This is the same name as that on the accompanying WDR form.
2. *Phone #:* Lab phone number of the waste generator.
3. *Waste Description:* Describe the chemical composition of the waste, (e.g., oil contaminated with mercury and tritium).

   Note: If a brand name is listed, the type of waste stream is also required (e.g., aqueous, oil, or organic solvents).
4. *pH:* List the pH if the waste is aqueous.
5. *Hazardous Properties:* Check appropriate box(es). If you do not know the hazardous properties of the waste, contact the RHWM field technician or environmental analyst.
6. *Hazardous Constituents:* Specify those principal hazardous constituents that make the waste exhibit each hazardous property identified.
7. *Waste Form:* Check appropriate box (one only).

   Note: Different waste forms are required to be segregated in separate containers.
8. *Contact Reading:* State the maximum measured beta-gamma, gamma, or neutron dose at surface contact (units in mR/hr). Indicate radiation type. The ES&H Team technician conducts the survey and records the reading prior to waste being moved from the SAA. Because the survey is required to be performed during the 3-day period after the container is closed, but before it is transferred to the WAA, arrangements should be made with the ES&H Team technician before closure.
9. *Disposal Requisition:* Copy the number from the upper left-hand corner of the WDR.
10. *Sample Analysis Number:* If the waste has been analyzed, copy the sample identification number from the Chemistry & Materials Science Environmental Services (CES) Laboratory Waste Analysis Request Form.
11. *Workplace Start Date:* The date mixed waste was first put into the waste container. For waste accumulated at the WAA, use the WAA Receival or Accumulation Start Date (see Item #13). The WAA operator completes the date that the waste from the SAA first arrived at the WAA, or when waste first began accumulating in the WAA.
12. *Workplace End Date:* The date the container was filled and/or sealed (9-month maximum accumulation time for containers in the workplace). Container surveying needs to be completed and containers need to be moved to the WAA within 3 calendar days of the workplace end date. Subsequently, the container is moved to RHWM within 90 days from the workplace end date. For waste accumulated at the

WAA, the end date is not explicitly indicated on the label, although waste accumulated in containers at the WAA is required to be moved to RHWM within 90 days from the WAA Accumulation Start Date (see Item #13).

13. *WAA Receival or Accumulation Start Date:* The WAA operator completes the date that the waste from the SAA first arrived at the WAA, or the date waste first began accumulating in the WAA.

    Note: The 90-day accumulation time in the WAA following accumulation in the SAA is calculated from the Workplace End Date, not the WAA Receival Date.)

    The WAA receival date can be no later than 3 calendar days after the Workplace End Date.

14. *RHWM Receival Date:* Filled out by RHWM when waste enters the RHWM facility. RHWM has 1 year from the receival date to treat, store, or dispose of the waste offsite.

15. *Compatibility Code:* Filled out by RHWM prior to waste entering the RHWM facility. This code assists in segregation of waste within the RHWM facility.

Appendix C

Waste Accumulation Area—Example of Weekly Inspection Checklist

Weekly Inspection Checklist

Date_____ WAA_____Inspector_____Time_____

General

Yes	No*	
☐	☐	Area posted with appropriate hazard and cautionary signs
☐	☐	Area free of spills
☐	☐	Secondary containment basin free of deterioration, liquid, and debris
☐	☐	Emergency equipment present and in proper operating condition (e.g., eyewash, showers)
☐	☐	Current Contingency Plan posted

Containers

Yes	No*	
☐	☐	All containers labeled with completed and dated waste labels visible for inspection
☐	☐	No waste containers present over the 90-day accumulation limit **Note:** If any waste containers are over the 90-day accumulation limit, contact your environmental analyst immediately.
☐	☐	Containers compatible with waste being stored
☐	☐	Containers closed except when adding or sampling waste
☐	☐	Adequate separation of incompatible waste
☐	☐	Ignitable and reactive waste isolated from sources of ignition and at least 50 feet from property line (perimeter fence)
☐	☐	Adequate aisle space between rows of containers/pallets (36 to 48 inches)

*Describe corrective action needed:

_____

_____

_____

Date corrective action completed:_____

Date_____Time_____

Signature of WAA Coordinator (only required when a corrective action is completed)